DOCKET NO: S1022.80263US00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Roy Mathieu
Serial No:	09/420,478
Confirmation No:	2856
Filed:	October 19, 1999
For:	POWER COMPONENT BEARING INTERCONNECTIONS
Examiner:	Nathan W. Ha
Art Unit:	2814

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being placed in the United States mail with first-class postage attached, addressed to **Mail Stop AF** Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the 6th day of July, 2004.

Eileen MacKenzie

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

This responds to the Office Action mailed May 25, 2004 in the above-identified application. For the following reasons, reconsideration and allowance of the rejected claims are respectfully requested. Claims 1-4 remain pending in this application.

I. Telephone Interview

Applicant notes with appreciation the courtesies extended by Examiner Ha in granting and conducting the telephone interview of June 16, 2004 with Applicant's representatives. A summary of the interview is incorporated into the following comments.

In the interview Applicant's representatives requested clarification of certain comments in Office Action. Specifically, the "Response to Arguments" section on page 3 of the Office Action indicates that the Office Action is responsive to the arguments filed by Applicant on June 16, 2003. However, a response was filed by Applicant on March 1, 2004. The Examiner

clarified that the present Final Office Action mailed May 25, 2004 is responsive to the response mailed by Applicant on March 1, 2004. The Examiner stated that the reference to the June 16, 2003 arguments was a typographical error that was intended to cite the March 2004 response.

An interview summary was mailed by the Examiner on June 18, 2004. Applicant would like to clarify that while the interview summary only mentions Nathan W. Ha (Examiner) and Tommy Franklin as taking part in the interview, James H. Morris, who is Applicant's representative, also took part in the interview.

II. Claim Rejections

Claims 1-3 stand rejected under 35 U.S.C. §103 (a) as purportedly being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Whitney (WO 95/04374). Applicant respectfully traverses this rejection.

Page 3 of the Office Action includes the statement that "it would have been obvious to one of ordinary skill in the art at the time of *[sic]* the invention was made to connect field plate to the thirst *[sic]* heavily doped region as taught by Whitney in order to prevent such surface charge induced breakdown since field plate would provide a uniform surface potential." During the telephone interview the Examiner clarified that the field plate being referred to in the above-recited statement is field plate 31 in Figure 2 of Whitney.

In response to this clarification from the Examiner, Applicant's representatives directed the Examiner's attention to the claimed field plate so as to highlight some of the distinguishing claim limitations. For example, the field plate of claim 1 extends lengthwise beyond the third region on either side of the third region in the direction of the wall and of the second region, which is not taught or suggested by Whitney. Applicant's representatives therefore requested clarification as to the manner by which the Examiner interprets the field plate 31 of Whitney corresponding to the claimed field plate, since page 3 of the Office Action includes the statement that the field plate of Whitney extends beyond the third region where it becomes 31 and 34.

In response to the request for clarification, the Examiner agreed with Applicant's representatives that the figures of Whitney do not show the field plate 31 of Whitney extending lengthwise beyond the layer 35 (referred to in the Office Action, and hereinafter for purposes of

simplicity only, as the third region) on either side of the third region 35. Moreover, the Examiner stated that he could find no teaching or suggestion anywhere in Whitney that the field plate 31 extends lengthwise beyond the third region 35 on either side of the third region 35. In fact, as indicated in the interview summary mailed June 18, 2004, the Examiner and Applicant's representatives reached an agreement that Whitney is ambiguous as to where the field plate 31 ends.

However, the Examiner stated during the interview that, in his opinion, Figure 2 of Whitney is cropped on its right side, as indicated by the curved line, and that he assumes the field plate 31 of Whitney does extend lengthwise beyond the third region 35 on either side of the third region 35 even though it is not explicitly shown as doing so. In support of this assumption, the Examiner stated that he could find no teaching in Whitney that the field plate 31 does not extend lengthwise beyond the third region 35 on either side of the third region 35.

Applicant respectfully submits that the Examiner's reasoning is improper. Even if Whitney contained no teaching that the field plate 31 does not extend lengthwise beyond the third region 35 on either side of the third region 35, this is not equivalent to teaching that the field plate does extend lengthwise beyond the third region on either side of the third region. It is improper for the Examiner to assume that the field plate 31 has the structure of the claimed field plate because of a perceived lack of teaching in the references to the contrary.

Furthermore, Applicant disagrees with the Examiner's viewpoint that Whitney does not teach or suggest that the field plate 31 does not extend beyond the third region 35, for at least two reasons. First, Figure 2 clearly shows that field plate 31 does not extend beyond third region 35 on either side of third region 35.

Secondly, as initially set forth in Applicant's response of March 1, 2004, and reiterated during the telephone interview, there is no technical reason why the field plate 31 of Whitney would extend beyond the N^+ region 35 to the right. This is because the N^+ type region is connected to first portion 34 of the field plate 31 to provide a good ohmic contact to the field plate structure, so that the potential of the field plate 31 and the potential of the substrate 21 will be essentially equivalent (page 5, lines 22-29). If the first portion 34 were to extend to the right beyond N^+ region 35, there would be no additional benefit in this regard. In other words,

extending the field plate to the right of N^+ region 35 would not improve the ohmic contact of the structure, since a good ohmic contact is not formed by contacting a conductive layer to the lightly doped N-type substrate. Thus, there is no reason taught or even suggested by Whitney to have the field plate extend to the right of N^+ region 35.

During the telephone interview the Examiner also commented that he did not see a reason for allowance of the present application since the figures of the present application are similar to the figures in Whitney. This, however, is not relevant. When determining patentability, it is necessary to compare the claimed invention to the teaching of the references. It is improper to deem claims unpatentable due to perceived similarities between the figures of an application and the references.

While no agreement as to the allowability of the claims was reached, or as to any manner by which to amend the claims in order to place them in condition for allowance, the Examiner did indicate that the claims would distinguish over the combination of Whitney and Applicant's admitted prior art if he were convinced that the field plate 31 of Whitney does not extend lengthwise beyond region 35 on either side of region 35.

Claims 1-4 Distinguish Over the Combination of Whitney and Applicant's Admitted Prior Art

Claim 1

Claim 1 is directed to a high voltage device formed in a region of a silicon substrate of a first conductivity type delimited by a wall of a second conductivity type. The high voltage device comprises a lower surface comprising a first region of the second conductivity type connected to the wall, an upper surface comprising a second region of the second conductivity type, a high voltage being likely to exist between the first and second regions and having to be withstood on the upper surface side by a junction between the second region and the substrate or by a junction between the wall and the substrate. The high voltage device further comprises a conductive track being likely to be at a high potential extending over the substrate between the second region and the wall, and a third region of the first conductivity type of a high doping level formed in the substrate under a portion of the track substantially halfway between the second region and the internal periphery of the wall, the third region being contacted by a field plate

which is insulated from the track, and extends widthwise at least substantially across the track and lengthwise beyond the third region on either side of the third region in the direction of the wall and of the second region.

As has been discussed in this response, and as the Examiner has agreed, Whitney does not teach or suggest the claimed field plate extending lengthwise beyond the third region on either side of the third region in the direction of the wall and of the second region. Furthermore, AAPA does not teach or suggest this limitation. There is no basis for assuming that the field plate 31 of Whitney corresponds to the claimed field plate. Thus, no combination of AAPA and Whitney, even if proper, teaches or suggests a field plate that extends widthwise at least substantially across the track and **lengthwise beyond the third region on either side of the third region in the direction of the wall and of the second region**, as claimed. For at least these reasons claim 1 distinguishes over the combination of AAPA and Whitney. Accordingly, Applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 2 and 3 depend from claim 1 and are allowable for at least the same reasons.

Claim 4

Claim 4 is directed to a high voltage device formed in a region of a silicon substrate of a first conductivity type delimited by a wall of a second conductivity type. The high voltage device comprises a lower surface comprising a first region of the second conductivity type connected to the wall, and an upper surface comprising a second region of the second conductivity type. The high voltage device further comprises a conductive track extending over the silicon substrate between the second region and the wall, and a third region of the first conductivity type having a high doping level formed in the substrate under a portion of the conductive track approximately halfway between the second region and an internal periphery of the wall. The high voltage device further comprises a field plate which is insulated from the track and extends widthwise at least substantially across the track and lengthwise on either side of the third region, beyond the third region, in the direction of the wall and of the second region, at least a portion of the field plate being in contact with the third region.

Neither AAPA nor Whitney teach or suggest **a field plate which** is insulated from the track and **extends widthwise at least substantially across the track and lengthwise on either side of the third region, beyond the third region, in the direction of the wall and of the second region**, at least a portion of the field plate being in contact with the third region, as claimed. Thus, the combination of AAPA and Whitney, even if proper, does not teach or suggest the recited limitation of claim 4. Hence, claim 4 distinguishes over the combination of AAPA and Whitney, and Applicant respectfully requests that the rejection of claim 4 under 35 U.S.C. §103(a) be withdrawn.

The Office Action Inappropriately Combines Different Features of AAPA

In addition, Applicant again contends that the Office Action inappropriately combines distinct features of Applicant's admitted prior art in asserting the combination of AAPA with Whitney, as argued in section B of the Response mailed March 1, 2004. Although that argument is not explicitly repeated here, Applicant maintains this position.

CONCLUSION

In view of the foregoing remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this response that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
Roy Mathieu, Applicant

By: _____

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Eileen MacKenzie

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Sir:

Transmitted herewith are the following documents:

[X] Response
[X] Return Receipt Postcard

If the enclosed papers are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned at (617) 720-3500, Boston, Massachusetts.

A check is not enclosed. If a fee is required, the Commissioner is hereby authorized to charge Deposit Account No. 23/2825. A duplicate of this sheet is enclosed.

Respectfully submitted,
Roy Mathieu, Applicant

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